



SEQUENCE LISTING

<110> Wittekind, Michael
Weinheimer, Steven
Zhang, Yaqun
Goldfarb, Valentina

<120> Modified Forms of Hepatitis C NS3 Protease for
Facilitating Inhibitor Screening and Structural Studies
of Protease:Inhibitor Complexes

<130> DB17Sequences

<140> 09/478,479

<141> 2000-01-06

<150> 60/115,271

<151> 1999-01-08

<160> 48

<170> PatentIn Ver. 2.0
PatentIn Ver. 3.2

<210> 1

<211> 182

<212> PRT

<213> Hepatitis C virus

<400> 1

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Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
20 25 30

Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
35 40 45

Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
50 55 60

Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
65 70 75 80

Lys Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr
85 90 95

Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
100 105 110

Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu
115 120 125

Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu

130 135 140

Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
 145 150 155 160

Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
 165 170 175

Glu Thr Thr Met Arg Ser
 180

<210> 2
 <211> 549
 <212> DNA
 <213> Hepatitis C virus

<400> 2

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 ggtggtccgc tgctgtgccc ggctggtcac gctgttggtg tcttccgtgc tgctgtttgc 480
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 cgttctga 549

<210> 3
 <211> 195
 <212> PRT
 <213> Hepatitis C virus

<400> 3

Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Val Leu Asn
 1 5 10 15

Gly Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr
 20 25 30

Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Ile
 35 40 45

Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys Ile Asn Gly Val
 50 55 60

Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro
 65 70 75 80

Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Lys Asp Leu Val
 85 90 95

Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys Thr Cys
 100 105 110

Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro

115 120 125

Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro
130 135 140

Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ala
145 150 155 160

Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val
165 170 175

Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr Thr Met
180 185 190

Arg Ser Pro
195

<210> 4
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<212> DNA
<213> Hepatitis C virus

<400> 4
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caggttgaag gtgaagttca gatcgtttcc accgctgctc agaccttcc ggctacctgc 180
atcaacgggtg tttgctggac cgtttaccac ggtgctggta cccgtaccat cgcttccccg 240
aaaggtccgg ttatccagat gtacaccaac gttgaâaaag acctgggttg ttggccggct 300
ccgcagggtt cccgttccct gaccccgctc acctgcgggt cctccgacct gtacctgggt 360
accggtcacg ctgacgttat cccggttcgt cgtcgtgggt actcccggtg ttccctgctg 420
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ggtcacgctg ttggtatctt ccgtgctgct gtttgcaccc gtgggtgttg taaagctggt 540
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<210> 5
<211> 15
<212> PRT
<213> Hepatitis C virus

<400> 5
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1 5 10 15

<210> 6
<211> 15
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<213> Hepatitis C virus

<400> 6
Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln Glu Thr Ser Gln Thr
1 5 10 15

<210> 7
<211> 15

<212> PRT
<213> Hepatitis C virus

<400> 7
Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln Gln Thr Ser Glu Thr
1 5 10 15

<210> 8
<211> 15
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<213> Hepatitis C virus

<400> 8
Gln Gln Thr Arg Gly Asn Gln Gly Cys Glu Lys Thr Ser Glu Thr
1 5 10 15

<210> 9
<211> 15
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<213> Hepatitis C virus

<400> 9
Gln Gln Thr Arg Gly Glu Gln Gly Cys Gln Lys Thr Ser His Thr
1 5 10 15

<210> 10
<211> 15
<212> PRT
<213> Hepatitis C virus

<400> 10
Gln Gln Thr Arg Gly Glu Gln Gly Cys Asp Glu Thr Ser Glu Thr
1 5 10 15

<210> 11
<211> 15
<212> PRT
<213> Hepatitis C virus

<400> 11
Gln Gln Thr Arg Gly Glu Glu Gly Cys Glu Gln Thr Ser Glu Thr
1 5 10 15

<210> 12
<211> 195
<212> PRT
<213> Hepatitis C virus

<400> 12
Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Val Leu Asn
1 5 10 15

Gly Ala Tyr Ala Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln Glu Thr
 20 25 30
 Ser Gln Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Ile
 35 40 45
 Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys Ile Asn Gly Val
 50 55 60
 Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro
 65 70 75 80
 Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Lys Asp Leu Val
 85 90 95
 Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys Thr Cys
 100 105 110
 Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro
 115 120 125
 Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro
 130 135 140
 Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ala
 145 150 155 160
 Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val
 165 170 175
 Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr Thr Met
 180 185 190
 Arg Ser Pro
 195

<210> 13
 <211> 588
 <212> DNA
 <213> Hepatitis C virus

<400> 13
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 caggttgaag gtgaagttca gatcgtttcc accgctgctc agaccttccg ggctacctgc 180
 atcaacgggtg tttgctggac cgtttaccac ggtgctggta ccgtaccat cgcttccccg 240
 aaagggtccgg ttatccagat gtacaccaac gttgacaaag acctgggttg ttggccgggt 300
 ccgcagggtt cccgttccct gaccccgctc acctgcgggt cctccgacct gtacctggtt 360
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 tccccgcgtc cgatctccta cctgaaagggt tcctccgggt gtccgctgct gtgcccggct 480
 ggtcacgctg ttggtatctt ccgtgctgct gtttgacccc gtggtggttg taaagctggt 540
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<210> 14
 <211> 197
 <212> PRT

<213> Hepatitis C virus

<400> 14

Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
1 5 10 15

Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln
20 25 30

Glu Thr Ser Gln Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
35 40 45

Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys Ile Asn
50 55 60

Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
65 70 75 80

Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Lys Asp
85 90 95

Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
100 105 110

Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
115 120 125

Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
130 135 140

Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
145 150 155 160

Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg
165 170 175

Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
180 185 190

Thr Met Arg Ser Pro
195

<210> 15

<211> 594

<212> DNA

<213> Hepatitis C virus

<400> 15

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aaaaaccagg ttgaagggtga agttcagatc gtttccaccg ctgctcagac cttcctggct 180
acctgcatca acggtgtttg ctggaccgtt taccacggtg ctggtaccgg taccatcgct 240
tccccgaaag gtccggttat ccagatgtac accaacgttg acaaagacct ggttggttgg 300
ccggctccgc aggggtcccg ttccctgacc ccggtcacct gcggttcctc cgacctgtac 360
ctggttaccc gtcacgctga cgttatcccg gttcgtcgtc gtggtgactc ccgtgggtcc 420
ctgctgtccc cgcgtccgat ctctacctg aaaggttctt ccggtggtcc gctgctgtgc 480

ccggctgggc acgctgttgg tatcttccgt gctgctgttt gcacccgtgg tgttgctaaa 540
gctgttgact tcattccggt tgaatccctg gaaaccacca tgcgttcccc gtga 594

<210> 16
<211> 197
<212> PRT
<213> Hepatitis C virus

<400> 16
Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
1 5 10 15
Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln
20 25 30
Glu Thr Ser Gln Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
35 40 45
Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Cys Ile Asn
50 55 60
Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
65 70 75 80
Ser Pro Lys Gly Pro Val Thr Gln Met Tyr Thr Asn Val Asp Lys Asp
85 90 95
Leu Val Gly Trp Gln Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
100 105 110
Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
115 120 125
Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
130 135 140
Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
145 150 155 160
Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg
165 170 175
Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
180 185 190
Thr Met Arg Ser Pro
195

<210> 17
<211> 594
<212> DNA
<213> Hepatitis C virus

<400> 17
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aaaaaccagg ttgaagggtga agttcagatc gtttccaccg ctaccagac cttcctggct 180
 acctgcatca acggtgtttg ctggaccgtt taccacggtg ctggtaccg taccatcgct 240
 tccccgaaag gtccggttac ccagatgtac accaacgttg acaaagacct ggttggttgg 300
 caggctccgc aggggtcccg ttccctgacc cagtgcacct gcggttcctc cgacctgtac 360
 ctggttaccc gtcacgtga cgttatcccg gttcgtcgtc gtggtgactc ccgtggttcc 420
 ctgctgtccc cgcgtccgat ctccctacct aaagggttcc cgggtggtcc gctgctgtgc 480
 ccggctgggc acgctgttgg tatcttccgt gctgctgttt gcacccgtgg tgttgctaaa 540
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<210> 18

<211> 197

<212> PRT

<213> Hepatitis C virus

<400> 18

Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
 1 5 10 15

Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Glu Glu Gly Cys Gln
 20 25 30

Glu Thr Ser Gln Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
 35 40 45

Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Ser Ile Asn
 50 55 60

Gly Val Leu Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
 65 70 75 80

Ser Pro Lys Gly Pro Val Thr Gln Met Tyr Thr Asn Val Asp Lys Asp
 85 90 95

Leu Val Gly Trp Gln Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
 100 105 110

Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
 115 120 125

Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
 130 135 140

Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
 145 150 155 160

Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Ser Thr Arg
 165 170 175

Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
 180 185 190

Thr Met Arg Ser Pro
 195

<210> 19

<211> 594

<212> DNA

<213> Hepatitis C virus

<400> 19

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aaaaaccagg ttgaagggtga agttcagatc gtttccaccg ctaccagac cttcctggct 180
acctccatca acggtgttct gtggaccggt taccacggtg ctggtaccg taccatcgct 240
tccccgaaag gtccgggttac ccagatgtac accaacgttg acaaagacct ggttggttgg 300
caggctccgc aggggtcccg ttccctgacc ccgtgcacct gcggttcctc cgacctgtac 360
ctggttaccc gtcacgtga cgttatcccg gttcgtcgtc gtggtgactc ccgtggttcc 420
ctgctgtccc cgcgtccgat ctctacctg aaaggttcct ccggtggtcc gctgctgtgc 480
ccggctggtc acgctgttgg tatcttcgt gctgctgttt ccaccgtgg tgttgctaaa 540
gctgttgact tcattccggg tgaatccctg gaaaccacca tgcgttcccc gtga 594
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<210> 20

<211> 197

<212> PRT

<213> Hepatitis C virus

<400> 20

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Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
  1             5             10             15
```

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Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Glu Gln Gly Cys Gln
          20             25             30
```

```
Lys Thr Ser His Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
      35             40             45
```

```
Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Ser Ile Asn
      50             55             60
```

```
Gly Val Leu Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
      65             70             75             80
```

```
Ser Pro Lys Gly Pro Val Thr Gln Met Tyr Thr Asn Val Asp Lys Asp
      85             90             95
```

```
Leu Val Gly Trp Gln Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
     100             105             110
```

```
Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
     115             120             125
```

```
Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
     130             135             140
```

```
Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
     145             150             155             160
```

```
Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Ser Thr Arg
     165             170             175
```

```
Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
     180             185             190
```

Thr Met Arg Ser Pro
195

<210> 21
<211> 594
<212> DNA
<213> Hepatitis C virus

<400> 21
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aaaaaccagg ttgaagggtga agttcagatc gtttccaccg ctaccagac cttcctggct 180
acctccatca acggtgttct gtggaccggt taccacggtg ctggtaccg taccatcgct 240
tccccgaaag gtccggttac ccagatgtac accaacgttg acaaagacct gggtggttg 300
caggctccgc aggggtcccg ttccctgacc ccgtgcacct gcggttcctc cgacctgtac 360
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ccggctggtc acgctgttgg tatcttccgt gctgctgttt ccaccctggg tgttgctaaa 540
gctgttgact tcatcccggt tgaatccctg gaaaccacca tgcgttcccc gtga 594

<210> 22
<211> 197
<212> PRT
<213> Hepatitis C virus

<400> 22
Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
1 5 10 15
Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Glu Gln Gly Thr Gln
20 25 30
Lys Thr Ser His Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
35 40 45
Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Ser Ile Asn
50 55 60
Gly Val Leu Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
65 70 75 80
Ser Pro Lys Gly Pro Val Thr Gln Met Tyr Thr Asn Val Asp Lys Asp
85 90 95
Leu Val Gly Trp Gln Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
100 105 110
Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
115 120 125
Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
130 135 140
Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
145 150 155 160

Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Ser Thr Arg
165 170 175

Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
180 185 190

Thr Met Arg Ser Pro
195

<210> 23

<211> 594

<212> DNA

<213> Hepatitis C virus

<400> 23

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aaaaaccagg ttgaagggtga agttcagatc gtttccaccg ctaccagac cttcctggct 180
acctccatca acggtgttct gtggaccggt taccacgggt ctggtaccgg taccatcgct 240
tccccgaaag gtccgggttac ccagatgtac accaacgttg acaaagacct ggttggttgg 300
caggctccgc aggggttcccg ttccctgacc ccgtgcacct gcggttccct cgacctgtac 360
ctgggtaccc gtcacgctga cgttatcccg gttcgtcgtc gtgggtgact ccgtgggtcc 420
ctgctgtccc cgcgtccgat ctctacctg aaagggttct ccggtgggtcc gctgctgtgc 480
ccggtgtggt acgctgttgg tatcttccgt gctgctgttt ccaccctggg tgttgctaaa 540
gctgttgact tcatcccggt tgaatccctg gaaaccacca tgcgttcccc gtga 594

<210> 24

<211> 197

<212> PRT

<213> Hepatitis C virus

<400> 24

Met Lys Lys Lys Gly Ser Val Val Ile Val Gly Arg Ile Asn Leu Ser
1 5 10 15

Gly Asp Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile
20 25 30

Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val
35 40 45

Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys Ile Asn
50 55 60

Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala
65 70 75 80

Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Lys Asp
85 90 95

Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys
100 105 110

Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val
115 120 125

Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro
130 135 140

Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys
145 150 155 160

Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg
165 170 175

Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu Glu Thr
180 185 190

Thr Met Arg Ser Pro
195

<210> 25
<211> 594
<212> DNA
<213> Hepatitis C virus

<400> 25
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tacgctcagc agactcgagg tctgctgggt tgcacatca cctccctgac cggtcgtgac 120
aaaaaccagg ttgaaggtga agttcagatc gtttccaccg ctgctcagac cttcctggct 180
acctgcatca acggtgtttg ctggaccggt taccacgggt ctggtaccgg taccatcgct 240
tccccgaaag gtcggtttat ccagatgtac accaacgttg acaaagacct ggttggttgg 300
ccggctccgc agggttcccg ttccctgacc ccgtgcacct gcggttcctc cgacctgtac 360
ctggttaccg gtcacgtgta cgttatcccg gttcgtcgct gtggtgactc ccgtgggttc 420
ctgctgtccc cgcgtccgat ctctacctg aaaggttcc cgggtgggtc gctgctgtgc 480
ccggctgggc acgctgttgg tatcttccgt gctgctgttt gcaccctggg tgttgctaaa 540
gctgttgact tcatcccggt tgaatccctg gaaaccacca tgcgttcccc gtga 594

<210> 26
<211> 11
<212> PRT
<213> Hepatitis C virus

<400> 26
Gly Ser Val Val Ile Val Gly Arg Ile Val Leu
1 5 10

<210> 27
<211> 68
<212> DNA
<213> Hepatitis C Virus

<400> 27
tatgaaaaaa aaaggatccg ttgttatcgt cggccgtata gtactgaacg gtgcttacgc 60
tcgcagac 68

<210> 28
<211> 71
<212> DNA

<213> Hepatitis C Virus

<400> 28
tcgagttctgc tgagcgtaag cacggttcag tactatacgg ccgacgataa caacggatcc 60

ttttttttttc a 71

<210> 29
<211> 19
<212> DNA
<213> Hepatitis C Virus

<400> 29
cagcagactc gaggtctgc 19

<210> 30
<211> 25
<212> DNA
<213> Hepatitis C Virus

<400> 30
gcacgaattc acggggaacg catgg 25

<210> 31
<211> 17
<212> PRT
<213> Hepatitis C Virus

<220>
<221> MISC_FEATURE
<222> (5)..(13)
<223> Xaa = His or Glu or Gln or Asp or Asn or Lys

<400> 31
Gln Thr Arg Gly Xaa Xaa Gly Cys Xaa Xaa Thr Ser Xaa Thr Gly Arg
1 5 10 15

Asp

<210> 32
<211> 51
<212> DNA
<213> Hepatitis C Virus

<220>
<221> misc_feature
<222> (13)..(39)
<223> v = g or c or a

<400> 32

cagactcgag gtvavvavgg ttgcvavvav acctccvava ccggtcgtga c

51

<210> 33
<211> 15
<212> PRT
<213> Hepatitis C Virus

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> wherein Xaa = Asn or Ile

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> wherein Xaa = Asn or Asp

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> wherein Xaa = Ser or Ala

<400> 33

Gly	Arg	Ile	Xaa	Leu	Ser	Gly	Xaa	Thr	Ala	Tyr	Xaa	Gln	Gln	Thr
1				5				10					15	

<210> 34
<211> 44
<212> DNA
<213> Hepatitis C Virus

<220>
<221> misc_feature
<222> (11)..(11)
<223> wherein w = a or t

<220>
<221> misc_feature
<222> (22)..(22)
<223> wherein r = a or g

<220>
<221> misc_feature
<222> (34)..(34)
<223> wherein k = g or t

<400> 34
ggccgtatca wcctgtccgg tracaccgct tackctcagc agac

44

<210> 35
<211> 44

<212> DNA
 <213> Hepatitis C Virus

 <220>
 <221> misc_feature
 <222> (7)..(7)
 <223> wherein w = a or t

 <220>
 <221> misc_feature
 <222> (18)..(18)
 <223> wherein y = c or t

 <220>
 <221> misc_feature
 <222> (30)..(30)
 <223> wherein m = a or c

 <400> 35
 catagtwgga caggccaytg tggcgaatgm gagtcgtctg agct

44

<210> 36
 <211> 15
 <212> PRT
 <213> Hepatitis C Virus

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> wherein Xaa = Asn or Ile

<220>
 <221> MISC_FEATURE
 <222> (7)..(7)
 <223> wherein Xaa = Asn or Asp

<220>
 <221> MISC_FEATURE
 <222> (12)..(12)
 <223> wherein Xaa = Ser or Ala

<400> 36

Gly	Arg	Ile	Xaa	Leu	Ser	Xaa	Gly	Thr	Ala	Tyr	Xaa	Gln	Gln	Thr
1				5				10					15	

<210> 37
 <211> 44
 <212> DNA
 <213> Hepatitis C Virus

<220>

<221> misc_feature
 <222> (11)..(11)
 <223> wherein w = a or t

 <220>
 <221> misc_feature
 <222> (19)..(19)
 <223> wherein r = a or g

 <220>
 <221> misc_feature
 <222> (34)..(34)
 <223> wherein k = g or t

 <400> 37
 ggccgtatca wcctgtccra cggtaaccgt tackctcagc agac

44

<210> 38
 <211> 44
 <212> DNA
 <213> Hepatitis C Virus

<220>
 <221> misc_feature
 <222> (7)..(7)
 <223> wherein w = a or t

<220>
 <221> misc_feature
 <222> (15)..(15)
 <223> wherein y = c or t

<220>
 <221> misc_feature
 <222> (30)..(30)
 <223> wherein m = a or c

<400> 38
 catagtwgga caggytgcca tggcgaatgm gagtcgtctg agct

44

<210> 39
 <211> 17
 <212> PRT
 <213> Hepatitis C Virus

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> wherein Xaa = Asn or Ile

<220>
 <221> MISC_FEATURE
 <222> (14)..(14)

<223> wherein Xaa = Ser or Ala

<400> 39

Gly Arg Ile Xaa Leu Ser Asp Gly Gly Ile Thr Ala Tyr Xaa Gln Gln
1 5 10 15

Thr

<210> 40

<211> 50

<212> DNA

<213> Hepatitis C Virus

<220>

<221> misc_feature

<222> (11)..(11)

<223> wherein w = a or t

<220>

<221> misc_feature

<222> (40)..(40)

<223> wherein k = g or t

<400> 40

ggccgtatca wcctgtccga cgggtggtatc accgcttack ctcagcagac

50

<210> 41

<211> 50

<212> DNA

<213> Hepatitis C Virus

<220>

<221> misc_feature

<222> (7)..(7)

<223> wherein w = a or t

<220>

<221> misc_feature

<222> (36)..(36)

<223> wherein m = a or c

<400> 41

catagtwwga caggctgccca ccatagtggc gaatgmgagt cgtctgagct

50

<210> 42

<211> 15

<212> PRT

<213> Hepatitis C Virus

<400> 42

Gly Arg Ile Asn Leu Ser Gly Asp Thr Ala Tyr Ala Gln Gln Thr
 1 5 10 15

<210> 43
 <211> 39
 <212> DNA
 <213> Hepatitis C Virus

<400> 43
 acgggaaccc tgcggagctg ccaaccaacc aggtctttg 39

<210> 44
 <211> 55
 <212> DNA
 <213> Hepatitis C Virus

<220>
 <221> misc_feature
 <222> (37)..(37)
 <223> wherein r = a or g

<400> 44
 caacgttggt gtacatctgg gtaaccggac ctttcgrgga agcgatggta cgggt 55

<210> 45
 <211> 37
 <212> DNA
 <213> Hepatitis C Virus

<220>
 <221> misc_feature
 <222> (19)..(19)
 <223> wherein m = a or c

<400> 45
 ccaggaaggt ctgggtagmg gtggaaacga tctgaac 37

<210> 46
 <211> 40
 <212> DNA
 <213> Hepatitis C Virus

<220>
 <221> misc_feature
 <222> (22)..(22)
 <223> wherein w = a or t

<400> 46

ctttagcaac accacgggtg gwaacagcag cacggaagat

40

<210> 47
<211> 52
<212> DNA
<213> Hepatitis C Virus

<220>
<221> misc_feature
<222> (21)..(21)
<223> wherein k = g or t

<220>
<221> misc_feature
<222> (36)..(36)
<223> wherein w = a or t

<400> 47
accgtggtaa acggtccaca kaacaccgtt gatggwggta gccaggaagg tc

52

<210> 48
<211> 78
<212> DNA
<213> Hepatitis C Virus

<220>
<221> misc_feature
<222> (21)..(21)
<223> wherein k = g or t

<220>
<221> misc_feature
<222> (36)..(36)
<223> wherein w = a or t

<220>
<221> misc_feature
<222> (60)..(60)
<223> wherein m = a or c

<400> 48
accgtggtaa acggtccaca kaacaccgtt gatggwggta gccaggaagg tctgggtagm

60

ggtggaaacg atctgaac

78